

IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

Claim 1 (previously presented): An optical scanning apparatus comprising:
a laser unit in which a light source and collimator lens are integrated;
an incident optical system for making a light beam emerging from said laser unit strike an optical deflector while keeping the light beam wider than a width of a deflecting surface of the optical deflector in a main scanning direction; and
an imaging optical system for forming the light beam reflected/deflected by the optical deflector into an image on a scanned surface,
wherein said laser unit is adapted to be shifted by shift adjusting means in a predetermined direction with respect to an optical axis of said incident optical system so as to make an illuminance distribution of scanning lines on the scanned surface become substantially symmetrical about a scanning central axis.

Claim 2 (previously presented): An apparatus according to claim 1, wherein the illuminance distribution on the scanned surface falls within $\pm 5\%$ with respect to the scanning central axis in an effective scanning range.

Claim 3 (original): An apparatus according to claim 1, wherein the predetermined direction is the main scanning direction or/and a sub-scanning direction.

Claim 4 (original): An apparatus according to claim 1, wherein the light beam emerging from said laser unit is a substantially parallel light beam.

Claim 5 (original): An apparatus according to claim 1, wherein when the optical axes of said incident optical system and imaging optical system are projected on a main scanning cross-section, the optical axes substantially coincide with each other.

Claim 6 (original): An apparatus according to claim 5, wherein the light beam emerging from said incident optical system is obliquely incident on the deflecting surface of the optical deflector in a sub-scanning cross-section.

Claim 7 (original): An apparatus according to claim 1, wherein the light beam emerging from said incident optical system is obliquely incident on the deflecting surface of the optical deflector in a main scanning cross-section.

Claim 8 (original): An apparatus according to claim 7, wherein said incident optical system is arranged in a main scanning cross-section based on the optical deflector.

Claim 9 (original): An apparatus according to claim 1, wherein said incident optical system comprises a stop plate, and

said laser unit is shifted by said shift adjusting means in a predetermined direction with respect to the optical axis of said incident optical system such that a ratio of intensities of two light beams obtained by splitting a light beam passing through said stop plate in two in the main scanning direction at a stop center becomes not more than 10%.

Claim 10 (original): An apparatus according to claim 1, wherein a tilt angle of the light source in the main scanning direction is set to not more than $\pm 2.5^\circ$ with respect to the optical axis of the collimator lens.

Claim 11 (original): An apparatus according to claim 7, wherein said laser unit is shifted in advance in the main scanning direction with respect to the optical axis of said incident optical system by an amount corresponding to an incidence angle at which the light beam emerging from said incident optical system is obliquely incident on the deflecting surface of the optical deflector in a main scanning cross-section.

Claim 12 (original): An image forming apparatus comprising:
said optical scanning apparatus defined in any one of claims 1 to 11;
a photosensitive member placed on the scanned surface;
a developing unit for developing an electrostatic latent image formed on said photosensitive member by a light beam scanned by said optical scanning apparatus into a toner image;

a transfer unit for transferring the developed toner image onto a transfer medium; and

a fixing unit for fixing the transferred toner image on the transfer medium.

Claim 13 (original): An image forming apparatus comprising:

said optical scanning apparatus defined in any one of claims 1 to 11; and

a controller for converting code data input from an external device into an image signal, and inputting the signal to said optical scanning apparatus.

Claim 14 (previously presented): A method for performing optical scanning using an optical scanning apparatus including a laser unit in which a light source and collimator lens are integrated, an incident optical system for making a light beam emerging from the laser unit strike an optical deflector while keeping the light beam wider than a width of a deflecting surface of the optical deflector in a main scanning direction, and an imaging optical system for forming the light beam reflected/deflected by the optical deflector into an image on a scanned surface, the method comprising the step of:

shifting the laser unit in a predetermined direction with respect to the optical axis of the incident optical system so as to make an illuminance distribution of scanning lines on the scanned surface become substantially symmetrical about a scanning central axis.

Claim 15 (previously presented): A method according to claim 14, wherein the predetermined direction is the main scanning direction or/and a sub-scanning direction.

Claim 16 (previously presented): The method of claim 14, further comprising the step of providing a controller for converting code data input from an external device into an image signal and inputting the signal to the optical scanning apparatus.

Claim 17 (canceled)

Claim 18 (currently amended): An optical scanning apparatus comprising:
a laser unit having a laser source and an optical element configured to emit a substantially parallel beam of light;

an incident optical system arranged to direct the light beam emerging from the laser unit to strike an optical deflector while maintaining a width of the light beam wider than a width of a deflecting surface of the optical deflector in a main scanning direction; and

an imaging optical system for forming the light beam deflected by the optical deflector into an image on a scanned surface,

~~wherein said laser unit is adapted to be shifted in a predetermined direction with respect to an optical axis of said incident optical system~~ wherein said laser unit is

adapted to be moved in the main scanning direction without moving in a direction of an optical axis of said incident optical system.

Claim 19 (currently amended): An optical scanning apparatus according to Claim 18, ~~wherein said laser unit is adapted to be shifted by a shift adjusting means in the predetermined direction with respect to the optical axis of said incident optical system~~ wherein said laser unit is adapted to be moved by move adjusting means in the main scanning direction without moving in the direction of the optical axis of said incident optical system.

Claim 20 (previously presented): An apparatus according to claim 18, wherein the illuminance distribution on the scanned surface falls within $\pm 5\%$ with respect to the scanning central axis in an effective scanning range.

Claim 21 (canceled)

Claim 22 (previously presented): An apparatus according to claim 18, wherein when the optical axes of said incident optical system and imaging optical system are projected on a main scanning cross-section, the optical axes substantially coincide with each other.

Claim 23 (previously presented): An apparatus according to claim 22, wherein the light beam emerging from said incident optical system is obliquely incident on the deflecting surface of the optical deflector in a sub-scanning cross-section.

Claim 24 (previously presented): An apparatus according to claim 18, wherein the light beam emerging from said incident optical system is obliquely incident on the deflecting surface of the optical deflector in a main scanning cross-section.

Claim 25 (previously presented): An apparatus according to claim 24, wherein said incident optical system is arranged in a main scanning cross-section based on the optical deflector.

Claim 26 (currently amended): An apparatus according to claim 18, wherein said incident optical system comprises a stop plate, and wherein said laser unit is ~~shifted in the predetermined direction with respect to the optical axis of said incident optical system~~ moved in the main scanning direction without moving in the direction of the optical axis of said incident optical system such that a ratio of intensities of two light beams obtained by splitting a light beam passing through said stop plate in two in the main scanning direction at a stop center becomes not more than 10%.

Claim 27 (previously presented): An apparatus according to claim 18, wherein a tilt angle of the laser source in the main scanning direction is set to not more than $\pm 2.5^\circ$ with respect to the optical axis of the laser unit.

Claim 28 (currently amended): An apparatus according to claim 24, wherein said laser unit is ~~shifted~~ moved in advance in the main scanning direction with respect to the optical axis of said incident optical system by an amount corresponding to an incidence angle at which the light beam emerging from said incident optical system is obliquely incident on the deflecting surface of the optical deflector in a main scanning cross-section.

Claim 29 (currently amended): An image forming apparatus comprising:
said optical scanning apparatus defined in any one of claims 18 to ~~[[28]]~~ 20
and 22 to 28;

a photosensitive member placed on the scanned surface;

a developing unit for developing an electrostatic latent image formed on said photosensitive member by a light beam scanned by said optical scanning apparatus into a toner image;

a transfer unit for transferring the developed toner image onto a transfer medium; and

a fixing unit for fixing the transferred toner image on the transfer medium.

Claim 30 (currently amended): An image forming apparatus comprising:
said optical scanning apparatus defined in any one of claims 18 to ~~[[28]]~~ 20
and 22 to 28; and
a controller for converting code data input from an external device into an
image signal, and inputting the signal to said optical scanning apparatus.

Claim 31 (currently amended): A method for performing optical scanning
using an optical scanning apparatus including a laser unit having a laser source and an
optical element configured to emit a substantially parallel beam of light, an incident optical
system arranged to direct the light beam emerging from the laser unit to strike an optical
deflector while maintaining a width of the light beam wider than a width of a deflecting
surface of the optical deflector in a main scanning direction, and an imaging optical system
for forming the light beam deflected by the optical deflector into an image on a scanned
surface, the method comprising the step of:

~~shifting the laser unit in a predetermined direction with respect to an optical
axis of the incident optical system~~ moving the laser unit in the main scanning direction
without moving in a direction of an optical axis of the incident optical system.

Claim 32 (currently amended): The method according to Claim 31, ~~wherein
the laser unit is shifted by a shift adjusting means in the predetermined direction with
respect to the optical axis of the incident optical system~~ wherein said laser unit is adapted

to be moved in the main scanning direction by move adjusting means without moving in a direction of an optical axis of the incident optical system.

Claim 33 (original): The method according to claim 31, wherein the illuminance distribution on the scanned surface falls within $\pm 5\%$ with respect to the scanning central axis in an effective scanning range.

Claim 34 (canceled)

Claim 35 (original): The method according to claim 31, wherein when the optical axes of the incident optical system and imaging optical system are projected on a main scanning cross-section, the optical axes substantially coincide with each other.

Claim 36 (original): The method according to claim 35, wherein the light beam emerging from the incident optical system is obliquely incident on the deflecting surface of the optical deflector in a sub-scanning cross-section.

Claim 37 (original): The method according to claim 31, wherein the light beam emerging from the incident optical system is obliquely incident on the deflecting surface of the optical deflector in a main scanning cross-section.

Claim 38 (original): The method according to claim 37, wherein the incident optical system is arranged in a main scanning cross-section based on the optical deflector.

Claim 39 (currently amended): The method according to claim 31, wherein the incident optical system comprises a stop plate, and wherein the laser unit is shifted in the predetermined direction with respect to the optical axis of the incident optical system moved in the main scanning direction without moving in the direction of the optical axis of the incident optical system such that a ratio of intensities of two light beams obtained by splitting a light beam passing through the stop plate in two in the main scanning direction at a stop center becomes not more than 10%.

Claim 40 (previously presented): The method according to claim 31, wherein a tilt angle of the laser source in the main scanning direction is set to not more than $\pm 2.5^\circ$ with respect to the optical axis of the laser unit.

Claim 41 (currently amended): The method according to claim 37, wherein the laser unit is ~~shifted~~ moved in advance in the main scanning direction with respect to the optical axis of the incident optical system by an amount corresponding to an incidence angle at which the light beam emerging from the incident optical system is obliquely incident on the deflecting surface of the optical deflector in a main scanning cross-section.

Claim 42 (currently amended): An image forming method comprising the steps of:

the method for performing optical scanning according to any one of claims 31 to ~~[[41]]~~ 33 and 35 to 41;

placing a photosensitive member on the scanned surface;
developing an electrostatic latent image formed on the photosensitive member by a light beam scanned by the optical scanning apparatus into a toner image;
transferring the developed toner image onto a transfer medium; and
fixing the transferred toner image on the transfer medium.

Claim 43 (currently amended): An image forming method comprising the steps of:

the method for performing optical scanning according to any one of claims 31 to ~~[[41]]~~ 33 and 35 to 41;

converting code data input from an external device into an image signal; and
inputting the signal to the optical scanning apparatus.

Claim 44 (currently amended): An image forming apparatus according to Claim 18, wherein ~~said predetermined~~ the main scanning direction, with respect to an optical axis of said incident optical system, is a direction that has a translational component.

Claim 45 (currently amended): An image forming apparatus according to Claim 18, wherein ~~said predetermined~~ the main scanning direction, with respect to an optical axis of said incident optical system, is a translational direction.